Towards a History of the Encyclopedia: From Amenemope of Egypt to the Collapse of Greek in Rome

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The history of the encyclopedia is far too complex a phenomenon to be undertaken in one assault. The present effort is confined to the West. It dares, however, to try to comprehend the main patterns in works claiming coverage of most or all knowledge, regardless of their (1) internal organization, (2) known or supposed audience, or (3) title.

Pursuing this goal will bring under review two types of material: works clearly or probably intended as compends rather than original creations and works which exerted great influence upon the compends. We shall when feasible check the compends against the advances of knowledge in various fields. We shall consider the ways in which information was organized and presented in the compends. And we shall monitor carefully the emergence of devices facilitating access to particulars within a compend.

So many of the writings of antiquity have been lost that one cannot speak of the "first encyclopedia." It may be acceptable, nevertheless, to begin with a few words about a work apparently composed in Egypt during the last quarter of the second millenium B.C., by one Amenemope. Entitled "A Text to Dispel Ignorance about Everything That Exists," it begins with the sky and the major fixed occupants thereof. Next come the familiar changeable elements: clouds, weather, light, darkness, shadow, sunbeams, and dew. He then moves to water and the means of storing it; following that, to shores, islands, soils, and seed. Only then does he turn to the gods, the goddesses, and the dead. Afterwards come the several social strata: royalty, nobles, and officials; craftsmen and petty bureaucrats; the people and the army; foreign peoples, cities, and states; age and sex groups; dockworkers; slaves. The next group combines Egypt's own cities and bodies of water, the Nile overflow, castles and suburbs, structures and their parts, and types of

agriculture. These lead into means of sustenance: grains, baked goods, sweets and drinks, and types of meat. Last are cattle, birds, and insects.[1]

Obviously, that is a rather clear-headed approach to the study of daily existence. To have been capable of composing it, Amenemope must have had at least the training of a scribe; very likely he was an official or a noble. His purpose we do not know: the work may have been intended simply for private discussion or reflection or perhaps just for information, since it seems to have ignored literary culture. In any case, the extant fragments of copies of later vintage do not reveal anything by way of a table of contents or index.

Whatever may have been composed in later Pharaonic Egypt or the Punic world, it is known that a tradition of writing encyclopedically was established in Greece at least by the time of Aristotle. His clearly identified contributions embrace many portions of what we call social science, natural science, and the humanities. The single title with notably composite coverage is the *Politics*, more meaningfully rendered as the "Polity," which systematically treats political economy, political science, and education, and is sprinkled—characteristically for him—with numerous allusions to earlier writers. He appears to have produced nothing quite like it in natural science or the humanities.

That Aristotle and other scholars of his time undertook some indexing in connection with their study and teaching is argued in Rudolf Blum's latest contribution.[2] Besides, the flowering of learning in Hellenistic Alexandria included a great assemblage of bio-bibliographic data by Callimachus, associated with the library. His celebrated *Pinakes* even furnished the dates of production of Attic drama.[3] Presumably, it served as major reference aid to those who comprehended its classified arrangement. Blum submits further that it was very likely a principal source for the bio-bibliographic writings essential to later epochs, of Diogenes Laertius (early third cent. A.D.), Hesychius of Miletus (sixth cent.), and *Suidas* (a title of the tenth cent.).[4]

As the great days of Alexandria ended about 150 B.C., much knowledge and some indexing of it were on record. Little is established about the indexing thereafter, but the torch of study was handed on to Rhodes, an island republic in the eastern Mediterranean, the base in the early first century B.C. of Posidonius of Apamea, Stoic philosopher and scientist extraordinary. At the peak of his fame, in 77 B.C., Cicero heard him in Rhodes (an ally of Rome since 164 B.C.). Posidonius was in Rome in the 60s and

50s as Rhodian ambassador, but he wrote in Greek and it has long been agreed by the specialists that the Romans were seldom capable of grasping Greek theoretical work. Cicero, one of his more likely students, chose to concentrate narrowly, leaving the broad educational efforts to Varro. Varro's scientific substance is the result of his heavy reliance on Posidonius's writing as sources, mainly at the handbook level, thus compensating posterity somewhat for having nothing directly from Posidonius.[5]

Marcus Terentius Varro was not the first Roman to write educationally, but he may reasonably be described as the first one to try to do it encyclopedically. In the loose sense, one may so speak of his nonliterary works as a group: his "Antiquities," studies of Latin, and writings on geography, naval matters, and law. Narrowly, the "Nine Books of the Disciplines" have been accepted as one of the earliest, if not the earliest, encyclopedia.[6]

The retired land magnate, soldier, senator, and literary figure was awesomely productive: he is credited by one modern expert with seventy-four titles.[7] He was highly respected by a great many thoughtful persons who came after him, such as Pliny and Augustine. Since he himself was instrumental in establishing the custom of becoming an authority by referring to as many earlier authorities as possible,[8] it would perhaps have comforted him to know that his own standing long remained solid. Those citing him may or may not have recognized that he was often paraphrasing the Greek manuals common in his day, especially on scientific subjects; in fact, he played a vital role in introducing them.[9] Some Greek words were known to "every Roman who had studied Cicero and Varro."[10]

Varro was consciously an educator. His later writings were frequently semipopular reworkings of content he had issued earlier for sophisticates.[11] A hallmark of his style, moreover, was to herald his discussion with an outline dividing/classifying what was to come.[12] According to Pliny, these efforts were made in Varro's eighties;[13] what effect that circumstance may have had upon them we do not know.

Let us consider first the widest-ranging item, his lost "encyclopedia" called "Libri IX disciplinae," or "Nine Books of the Disciplines." The presumed central pattern was the Greek standard curriculum for secondary education, the seven liberal arts, somewhat enriched topically. The literary group, labeled in the Middle Ages the *trivium*, consisted of grammar—or linguistics plus literature; rhetoric—the arts of expression and persuasion; and dialectic—reasoning. By examining later references to Varro and considering

the probabilities of his own schooling, one can draw some inferences which may be not only plausible but correct. One of Varro's teachers, Stilo, was a Stoic; in the Stoic scheme of knowledge logic was one of the three major departments and included the trivium.[14] Varro may have undertaken to write in precisely that fashion. He probably did cover grammar, because Stilo was a leading grammarian.[15] We know nothing of what Varro may have written about rhetoric.[16] He is said to have dealt with language and reasoning under dialectic.[17]

The scientific group later called the *quadrivium* (by Boethius, sixth cent.) embraced geometry, "arithmetic" (i.e., theory of numbers, etc.), astronomy, and "music" (i.e., ratio and proportion in musical notes and distances among the heavenly bodies). Varro's encyclopedia probably included some geometry and surveying, judging from indications in later writers.[18] That it presented "astronomy" is beyond doubt, because Cassiodorus (late sixth cent.) rejected Varro's (and others') astrology as inappropriate for his monks at Vivarium and directed them to follow Holy Scripture instead.[19] It is supposed that music was part of the offering because a few writers in the succeeding generations cited Varro—or pretended to.[20] Nothing extant, apparently, testifies to a book on arithmetic.

Varro undertook to go further, probably an expression of the Roman interest in and talent for applied science. His contemporary Vitruvius, the leading authority of the day in architecture and engineering, states that Varro gave one whole book of the "Disciplines" to "these topics."[21] He is thought to have included medicine too, because Martianus Capella, fifth-century encyclopedist, explicitly disparaged both architecture and medicine as transitory, merely earthly,[22] and removed them from association with the seven liberal arts. (The latter were supposedly of much higher standing, designed for "free" men, those who need not soil their hands.) That he had a point is suggested by a modern scholar, who notes that most Greek medical practitioners of Roman times were freedmen and slaves,[23] that is, men who did work with their hands. The same observer adds the unusual reflection that Varro's ignoring military science seems odd.[24] Indeed it does, inasmuch as Varro was an ex-soldier and wrote on other applied arts.

The second of Varro's major contributions, the "Antiquities," is known to us primarily because Augustine attacked it in *The City of God*, Book 6. Varro's forty-one books apparently began with an introduction to human affairs and proceeded to offer six books concerning people—back to Troy and the *Aeneid*; six about places

in Italy; six about time—especially the chronology of Rome; and six devoted to things. Only then did he present his sixteen books on matters divine, to Augustine's great distress. Varro argued that divine things were "instituted" by men, and emphasized rites, and the occasions, places, and celebrants thereof—nothing metaphysical. He identified three "theologies": the mythical of the poets, the natural of the Stoics, and the civil—laws and customs vital to the state.[25] Augustine notes unhappily that Varro's account of the gods opened with "the moment of man's conception" and ended with the goddess who sings at funerals and that the other gods were described in terms of their respective connections with man's life necessities.[26]

Varro's third educational contribution was the "Images," a biographical dictionary of Greek and Roman celebrities with 700 portraits and metrical eulogies.[27] Nearly a century later, Pliny drew attention to "a strong passion for portraits" in late Republican days—in bronze, or even in gold and silver. He thought Varro's feat, accomplished "by some means" unknown to him, a service the gods might envy.[28] There is supposed to have been a popular edition as well, without the portraits.[29]

If Varro was the most wide-ranging of scholar-educators, his quality did not match that of his mentor Posidonius. That he had the capacity personally to comprehend theory, particularly in science, is perhaps doubtful. Actually, if he had wanted to translate leading Greek scientific works, help was available; it seems evident that he did not want to, that rewriting for the popular audience was his top priority.[30] Whatever his success in that endeavor, the surviving data about his educational efforts do not mention any indexing apparatus. Yet the Latin style coming into view in his day, the incorporation of the number of "books" in a given title—note "The Nine Books of the Disciplines"—was at least suggestive of internal structure.

Meanwhile, a notable model of alphabetical arrangement appeared on the scene, Verrius Flaccus's highly regarded treatise, "On the Significance of Words." That compilation dealt with words and grammar, as expected of a grammarian or rhetorician; moreover, it became a prototype in the tradition stressing words rather than things, soon to be encouraged first by Neoplatonism and then by victorious Christianity. Flaccus's contribution was also a harbinger of the future in that it associated with its focus on words much information on history, antiquities, mythology, and religion, drawing on jurists and old legal documents as well as literary sources and historians. While Flaccus relied like everyone else on earlier

writers, he was one of that more select number who also did research of their own: in his case, at least on Cato. Although Varro is one of the ten authorities most often quoted by Flaccus, he also offers material apparently not in Varro. So we are told, at any rate, by Henry Nettleship, who not only studied Flaccus through a summary (ninth cent.) of a summary (second cent.), but tracked down traces of his writing in later authors who may be presumed to have used him.

Verrius Flaccus organized all his material as an encyclopedia of scholarship, in alphabetical order. Why it was organized in that fashion is not altogether certain however, because we have the text only at two removes from the original, and because our evidence suggests two possible interpretations. One is that Flaccus was making notes in the prevailing manner, from collections assembled by various unknown anthologizers from literary sources, one author at a time, frequently presented in alphabetical order of the source. The other hypothesis is that interest in Latin lexicography encouraged the alphabetical arrangement. In any case, Flaccus's work seems to have been the first of its kind in Latin literature, and remained highly respected. Between the quality of his effort and the increase of focus on the Latin language as classical Latin declined, it was apparently only natural that students of the early second century welcomed a summary prepared by one Festus.[31]

The same tradition, giving attention essentially to lexicography and grammar and Roman antiquities (thanks to Varro), but very little to nature, also produced a serious original encyclopedic effort in the late first century by Valerius Probus (fl. 56–88), "A Collection of Observations on Ancient Expression."[32]

Meanwhile a literature centered on nature was developing. Writings on the material world had been familiar from the days of the Republic: Cato on agriculture; Lucretius's famous poem, "The Nature of the Universe," advocating the "atomic" approach; and Vitruvius's classic of engineering, *On Architecture*. The early days of the Empire added among other items a work (ca. 10 B.C.) stressing food problems, by the Stoic physician-botanist and vegetarian, Sextius Niger; and in Tiberius's reign (14–37) an assemblage of apparently broader but uncertain scope by the popularizer A. Cornelius Celsus. Only the medical portion of Celsus's contribution is extant, but there is fairly good evidence in other writers that he also dealt with rural economy, military arts, rhetoric, philosophy, and law.[33]

By the end of the first century A.D., Roman civilization was further provided with the *Natural History* of Pliny the Elder (23–79),

notable, if for no other reason, because it is the oldest broadly conceived reference work known to us which has survived complete. Pliny was an aristocrat of military and governmental experience; he had not only financial resources but the intellectual energy to make acres of notes from omnivorous reading and look at the world about him with exceptional curiosity. He declares in his preface that to acknowledge his authorities is not showing off but "honorable modesty." He had found "when collating authorities . . . that the most professedly reliable and modern writers" had "copied the old authors word for word, without acknowledgment."[34] This was not Cicero's way, nor would it be his.

The preface opens with a salute to emperor-designate Titus. It closes with Pliny's assurance that in acknowledging his "duty in the public interest" to remember that the emperor is busy he has furnished a table of contents and "taken very careful precautions to prevent your having to read" the entire work. For "this plan," providing easy access to "the particular point" wanted, there was a precedent in "Roman literature."[35]

We cannot be sure how valuable or influential the precedent was, but we can examine Pliny's own devices. His text wanders, but can be seen to follow a plan, both from book to book and within each book. In book 1 he presents an analytical table of contents for the thirty-six books which follow, stating book by book what will be found in the sections within. There are enough details to occupy seventy-one pages of the Latin of the Loeb edition. Despite the absence of the alphabetical index the modern eye would expect, many "particular points" probably could be found without undue struggle.

Books 2–6 are devoted essentially to cosmography, geography, and ethnography. Book 7 concerns mainly the characteristics physical and spiritual of humankind; there is much about Rome and the Romans; the last group of sections deals with inventors and inventions, concluding with "Total: 747 facts, investigations, and observations" (vol. 1, p. 41). Books 8–11 cover the rest of the animal kingdom, including some comparative anatomy which embraces man as well. Striking both for criticism of Aristotle and for subtlety is Pliny's rejection of an idea he attributes to the great Stagirite, that "our bodies contain premonitory signs of our career." He expresses surprise at two levels: that Aristotle believed such things, and that he published his beliefs (11, marginal number 273).

The vegetable world absorbs books 12–27. Much of the discussion is focused on its usefulness to man in the form of drugs, a lead-

ing theme in Pliny. The drugs obtained from animals are considered in books 28–32.

Opening the third book in this area (14), devoted to trees "common to various countries," he warns "the student" to remember "that for the present we are specifying their nature and not their modes of cultivation, although actually a very large factor in the nature of a tree is due to its cultivation" (14.1). Plainly, he expects "students" to read his *Natural History*. And in book 19, given largely to commercial crops, he remarks that the discussion in book 18 (on grains and herbaceous plants) was "easy even for non-experts to understand" (19.1). In the same passage he declares that really sharp individuals realize that agriculture contributes to astronomy no less than astronomy contributes to agriculture. He thus makes two important points: that a good practical Roman need not defer to Greek theoretical science and that theory and practice exert reciprocal influence, beneficial to humanity. The dialectics of nature is further recognized in the remark opening book 21, on flowers and their uses, about "nature at peace or at war with herself."

Writing about materia medica also provides one of the numerous occasions on which Pliny writes sorrowfully of the decline of Roman moral fiber. He complains that "cunning profiteering led to the invention of the quack laboratories, in which each customer is promised a new lease of his own life at a price" (24.4), and that in medicine "we are the subjects of foreigners" (24.5). He offers a history of medicine at the opening of book 29.

More distressing to him was magic, "the most fraudulent of the arts" (30.1), dangerous because it exerted great influence by way of medicine, religion, and astrology. He thinks magic was "the backbone of" the *Odyssey* and finds "the complete silence of Homer about magic in his poem on the Trojan War . . . most surprising" (30.5). This is one of the very few passages in the *Natural History* dealing with literature. He adds, "Certainly Pythagoras, Empedocles, Democritus, and Plato went overseas to learn [magic]" (30.9).

Moral degeneration and magic are linked in his outburst against the long history of human sacrifice. He wished Emperor Nero, in checking his suspicions on that subject, had consulted "the powers of Hell and any other gods whatsoever, instead of entrusting these researches to pimps and harlots" (30.15).

Books 33–37 survey the mineral world, first the precious metals, coinage, and ornamentation then the other metals—with an excur-

sus into bronze and other sculpture. Undertaking next to discuss painting, he finds himself treating nonmineral pigments as well as the mineral-derivatives, and a bit of the history of painting, especially in Rome. The last two books review stones, building materials, and gems. In nearly every instance, whatever other use the mineral may have, he notes its role as a drug.

Reflecting on coinage leads Pliny to offer some remarks on the inflationary potential of gold and silver and the introduction of usury (33.26, 28). He observes that rings have become an important indicator of class (33.29). On prices he speaks thus (33.164):

> We are not unaware that the prices of articles which we have stated at various points differ in different places and alter nearly every year, according to shipping costs or the terms on which a particular merchant has bought them, or as some dealer dominating the market may whip up the selling price. . . .

He further brings out the impact of these circumstances on plastic art, noting that brilliant colors, thanks to "high cost," are supplied to the painter by the patron (35.44, 30), and that great effort and expense are entailed in transporting marble long distances (36.1–3).

For a "natural historian" he also displays remarkable sensitivity to art styles. He contends that painted careful likenesses have given way to bronzes with dim outlines which represent, as it were, the subject's money rather than himself (35.4–5). When inventorying "firsts" in statuary he includes the first women thus memorialized (34.28–29), and the long disquisition on painters ends with a paragraph on women painters (35.147–148).

Pliny appears to respect work and workers. He salutes not only those skilled in marble-work (36.39) but "the common folk" who as "laborers" built sound streets, sewers, walls, etc., in Rome, under the harsh leadership of Tarquin Priscus (36.107).

Most of the foregoing is indicated in the very informative book 1. Its structural help was mentioned at the outset. At this stage, the reader can appreciate Pliny's seriousness as expressed in the *Summa* or "Total" with which he ends the abstract for each of books 2 to 37. It reads either "Total 288 [for instance] drugs, investigations and observations" or "Total 468 [for instance] facts, investigations and observations." (The Latin terms are *medicinae, historiae, observationes*, and *res* for "facts.")

What was his aim? How did he see his labor, beyond the formal dedication to the emperor cited above? His preface speaks somberly

of eschewing interest or entertainment. "My subject is a barren one—the world of nature, or in other words life." No Roman has tried covering it before; indeed, no Greek has taken on "single-handed all departments." The agreeable is studied widely and becomes stale. The difficult gets less attention: what the Greeks call *enkyklios paideia*, basic subjects, ought to be best known, but they are either unknown or "obscured by subtleties." To tell the story well despite the obstacles is difficult, yet any attempt to delineate nature is "honorable and glorious" (pref.13–15).

In pursuit of that goal he has perused "about 2,000 volumes," most of them too advanced for "students." His 36 books assemble "20,000 noteworthy facts" from 100 authors, and others "either ignored by our predecessors" or discovered later. He concedes that, being "but human, and beset with duties," he has doubtless missed a few things himself. "I dare make no promise" (pref.17–19). When his work is published it will assuredly be criticized; like Cato the Censor—a favorite resource for defenders of old-fashioned virtue—he will ignore the "quibblers" (from Cato's *vitilitigatores*; pref. 30, 32).

What did he produce and how well? The main content, as sketched in the preceding pages, was nature, with special emphasis on its uses for humankind. Embedded therein is a fair amount of geography, biography, and nonsense. There are scattered bits of history and explanations of productive arts, surprising attention to the plastic arts, stray references to philosophy and literature, but nothing or almost nothing about music or the drama. No attempt was made to teach either the literary trivium or the scientific quadrivium.

Pliny's quality was assessed some time ago. German scholars in particular examined his writing with care, and in due course generated three schools of thought. The majority faction took the moderate view that Pliny read a great deal, that he sometimes drew on Greek authorities but preferred fellow Romans, and that while citing a tremendous number of writers he did not necessarily credit specifically every detail he owed to one of them.[36] To that degree he was very much like Varro, whose Roman patriotic model and writings he much admired; like Varro he was addressing readers who were not scholars but were educated enough to be above the simplest level.

Also like Varro, he was inclined to Stoicism, taking nature as it came, seeking always for evidence that nature was trying to serve man.[37] He apparently accepted, like his educated contemporaries, the nature knowledge inherited from the Greeks. This could even

mean relying on Greek geographers and their sailor's focus on coasts when his own experience and observations in Germany, for example, would almost surely have supported a far more appropriate stress on inland areas.[38] Besides, most of the Greek science was inevitably out of date soon enough. What remained impressive longest were the descriptions of fauna and flora borrowed from Aristotle and his pupils, the overwhelming preoccupation with applicability of natural products to the advantage of human health, and the frequent perception of the dialectics of nature.

On the other hand, just as Varro knew considerably less than Posidonius, so Pliny understood much less than Varro, testimony to the steady deterioration of scientific knowledge associated with decline in ability to read Greek.

On balance, the pioneer historians of science fifty years ago agreed that Pliny had done about as well as could be expected, considering his circumstances, and emphasized the influence of his work in the Middle Ages.[39] Similar high marks were accorded by the outstanding modern literary historian of Rome, J. Wright Duff.[40] To these accolades one may add very recent praise of Pliny for his skepticism and sense of humor.[41]

It would appear that, in the late first century and early second century, a substantial number of Romans constituted a market for encyclopedic writings. They already had Pliny's *Natural History*, emphasizing things—nature and its relations with man, and Festus's summary of Verrius Flaccus, focused contrariwise on words as the means of understanding present and past. Besides, there was reportedly at least one work (lost) purporting to offer material for both tastes, "The Meadows," a compilation of both natural science and Roman antiquities, by Suetonius, celebrated author of *The Lives of the Twelve Caesars*.[42] Although "The Meadows" has been suggested as a major source for the seventh-century encyclopedia by Isidor of Seville,[43] the only clear evidence of its use as a source is for another of his works.[44]

The decline of knowledge during the second century seems to be indicated by Aulus Gellius's renowned *Attic Nights*, composed perhaps in the 160s during his days in Athens.[45] Not only does bookishness predominate over scientific curiosity, as in Suetonius, but Gellius's wide reading, at least in collections of quotations if not in originals, was put to poor use for anything but entertainment because of weak organization. The subjects he dealt with have been identified systematically by Henry Nettleship;[46] to do so Nettleship in effect had to massively rearrange what Gellius actually wrote.

Towards the end of the century, two contradictory currents emerged. One was the swelling stream of Middle Platonism, associated with "universal intelligence" and the mysticism of Plato's *Timaeus*—wherein nature serves as God's instrument, a matrix hospitable to the curiosity of Apuleius, writer on medicine, grammar, and magic, and translator of Nichomachus's arithmetic.[47] The other current was the renewed vigor of skepticism towards all supposed "knowledge," conspicuous in the "Skeptical Commentaries" of Sextus Empiricus, an "empiric" in medicine and philosopher of sorts.[48]

Concern for practical knowledge was not, however, altogether lacking. Jerusalem-born Julius Africanus served Rome in several military and administrative capacities; under Alexander Severus (emperor 222–235) he was director of public works and built among other things Rome's Pantheon library. Perhaps, like so many functionaries of his type, he had some mathematical skill. The supposition seems plausible particularly because he assembled in about the year 230 what became the fundamental ecclesiastical chronology for contemporary Christianity. More important for our story, if we may hypothesize from the little recorded about his encyclopedia, he felt able to write about military tactics, agriculture, natural history, medicine, and magic. He said that copies of his work were in the libraries of Jerusalem and Nysa-in-Caria. We have only fragments, preserved in the classic German collections of ancient mathematics, which apparently throw little or no light on either the structure of his encyclopedia or access devices enhancing its usefulness. It would be interesting to know why he called his Greek composition *Kestoi*, rendered by Sarton as "embroidered girdles."[49]

The meaning of "Compendium of Teaching Material" seems plain enough. There were evidently several chapters on grammar, and several others on miscellaneous matters; the topics were arranged more or less in alphabetical order,[50] perhaps in imitation of Verrius Flaccus. Rich in quotations, it was utilized heavily by Priscian, the influential sixth-century grammar-text writer. The "Compendium" was probably composed early in the fourth century. We know that the author, Nonius Marcellus of North Africa, in an epoch dominated by Neoplatonism and other idealisms, defiantly announced himself a "Peripatetic,"[51] i.e., a follower of Aristotle, very likely a materialist. Presumably, he read Greek.

There is no doubt about the Greek of contemporary Chalcidius, known to all subsequent scholarship for translating Plato's *Timaeus* into Latin and commenting on it. Where he labored is not altogether clear: we know only that he dedicated his contribution to

the bishop of Cordoba, Spain.[52] He is understood to have followed Adrastos of Aphrodisias, a second-century Aristotelian, in considering the mathematical and astronomical issues in the *Timaeus*.[53] The tradition about to nourish numerous medieval encyclopedias was thus much more oriented on abstractions than upon the actual physical world.

Whereas Chalcidius addressed readers prepared to grapple with the principle of causality[54] and other Platonic abstractions, the end of the fourth century found a pagan Neoplatonist, Macrobius, trying to reach a broader audience, readers inclined more towards conversation pieces like dream literature and numerology. Macrobius's vehicle was a commentary on "The Dream of Scipio," Cicero's vision of life beyond the conventional "known," probably prepared in 54 B.C. in the form of the bulk (secs. 9-26) of the last book of his political science tract, *The Republic*.[55] It dealt with the cosmos; the music produced by the revolving of the concentric spheres composing the cosmos—except for the earth, the nonrevolving sphere at the center; the geography of and distribution of people on the earth; the significance of the number seven; the eternal God moving the universe; and the spirits. All this Cicero had derived from Plato, mainly the *Timaeus*.

Whether Macrobius could comment sensibly depended on his familiarity with the issues, in turn dependent upon his knowing Greek, not a common asset. In the judgment of early specialist Whittaker (1856-1935), he possessed "real knowledge" of Neoplatonists Plotinus and Porphyry, who wrote in Greek.[56] Courcelle, weighing the evidence in 1912, a generation later, concluded that Macrobius handled Greek well enough to draw on Greek compilers like Plutarch when the Latin anthologies failed him, but that, in the fashion then predominant, he seldom consulted primary sources.[57] Besides having the ability to read Greek, Macrobius was prudent. He avoided questions on which Neoplatonists and Christians differed sharply,[58] treated the occult respectfully,[59] and kept just enough abstractions, such as man-the-world-in-microcosm,[60] to interest but not dismay his readers.[61] Most of the latter, indeed, learned "astronomy" as had their fathers for more than six hundred years—as the subject of Aratus's poem of ca. 275 B.C., a paraphrase of the real astronomy of Eudoxus of Cnidos with literary rather than scientific pretensions.[62] Altogether, his presentation was sufficiently simple and plausible to be popular: it was among the first works printed (Venice, 1472).[63]

While Cicero's fame helped Macrobius to attract attention, the

latter's remarks on topics not discussed in the "Dream," such as comparative Greco-Latin grammar, did not arouse much interest. That is significant: in 400 the Latin West was already focussing on what related to the Bible and liturgy; anything else suffered, unless aided by a force like Cicero's standing.[64] Besides, knowledge of Greek had virtually collapsed in Rome. The next few works of significance, theology-centered, were going to appear elsewhere.

At the turn of the fifth century A.D. a would-be encyclopedist could profit from concise writing in many fields, examples of systematic presentation of diverse topics and devices for easy access to particulars, and a strong pedagogical focus on the seven liberal arts.

Notes

1. Evgenii Shamurin, *Geschichte der bibliothekarisch-bibliographischen Klassifikation* 2 vols. (Leipzig: VEB Bibl. Inst., 1964), 1: 11.

2. "Kallimachos u. die Literaturverzeichnung bei den Griechen," *Archiv für Geschichte des Buchwesens*, 18: 1 (February 1977), cols. 50-92 passim.

3. Ibid., 200-201.

4. Ibid., 247-248.

5. "Poseidonios," *Real-Encyclopedie der Klassischen Altertumswissenschaft*, ed. Pauly-Wissowa (Stuttgart: Metzler Verlag, 1894-), 43 (1953), col. 565; "Rhodos," *R. E.* Supplement v. 5 (1931), col. 801; William H. Stahl, *Roman Science* (Madison: Univ. of Wisconsin Press, 1962), pp. 46, 71-72. For a scholarly estimate of established facts about particular titles by Posidonius, see Marie Laffranque, *Poseidonios d'Apamée* (Paris: Presses Universitaires de France, 1964), esp. pp. 100-101.

6. Pierre Grimal, "Encyclopédies antiques," *Cyclopédies et civilisations* (Cahiers d'Histoire Mondiale, 9, 1966), p. 470.

7. Stahl, *Roman Science*, p. 75; but compare the "39 identified" of a "possible 100" in Gaston Boissier, *Etude sur la vie et les ouvrages de M. T. Varron* (Paris: Hachette, 1861), pp. 35, 37.

8. Stahl, *Roman Science*, p. 75.

9. Stahl, *Martianus Capella and the Seven Liberal Arts* (New York: Columbia Univ. Press, 1971), p. 52.

10. Pierre Courcelle, *Les lettres grecques en occident* . . . (Paris: Boccard, 1948), p. 139.

11. Boissier, *Etude sur la vie*, pp. 54, 333.

12. Grimal, "Encyclopédies antiques," pp. 468-469.

13. Pliny [the Elder], *Natural History*, Loeb Classical Library, 29: 65.

14. Richard Johnson in Stahl, *Martianus Capella*, p. 98.

15. Ibid., p. 100.

16. Ibid., p. 119.

17. Grimal, "Encyclopédies antiques," p. 471.

18. See for instance Stahl, *Martianus Capella*, p. 127; Boissier, *Etude sur la vie*, p. 6.

19. Courcelle, *Les lettres grecques*, p. 335; see *Cassiodori senatoris institutiones*, ed. R. A. B. Mynors (Oxford: Clarendon Press, 1937), p. 157.

20. Boissier, *Etude sur la vie*, p. 6. Johnson in Stahl, *Martianus Capella*, p. 206.

21. *On Architecture*, Loeb Classical Library, 7. 14.

22. Shamurin, *Geschichte*, 1: pp. 37, 321, citing K. R. Simon's monograph on Capella (in Russian).

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28. Pliny, *N. H.*, 35. 11; see also remarks about Scipio Aemilianus, 22. 13.

29. See ftn. 27.

30. Johnson in Stahl, *Martianus Capella*, p. 233.

31. Henry Nettleship, *Lectures and Essays on Subjects Connected with Latin Literature and Scholarship* (Oxford: at the Clarendon Press, 1885), pp. 205-209, 212-213, 219-220. (Published originally in *American Journal of Philology*, 1 [1880]: 253-270 and 2 [1881]: 1-19.)

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34. Pliny, *N. H.*, pref.21-22.

35. Ibid., 33. The precedent was Valerius Soranus's "Lady Initiates," which Pliny cited in Greek; the contents are reported unknown in *R.E.*, 2nd series, 15 (1955), col. 226.

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37. John Wright Duff, *A Literary History of Rome in the Silver Age*, ed. A. M. Duff, 3d ed. (London: Benn, 1964), pp. 287–292; "Plinius der Ältere," *R.E.*, v. 41 (1951), cols. 409–418 passim.

38. Stahl, *Roman Science*, p. 86.

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41. Review of *Natural History* ch. 37, ed. E. de Saint-Denis (Collection Budé) in *Classical Review*, n.s. 25: 49 (April 1975).

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43. Nettleship, *Lectures and Essays*, p. 225.

44. The *De natura rerum*. See Maurice de Gandillac, "Encyclopédies pré-médiévales et médiévales," *Cyclopédies et civilisations*, p. 520.

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